

REMARKS

Currently, claims 1, 2, 4-11 and 22-26 are pending. Claims 22-26 have been added in this Amendment. Claim 3 was canceled without prejudice.

The Specification

An amendment has been made to page 16 to correct a typographical error.

Claim Rejections - 35 U.S.C. §112

Claims 1-11 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The claims have been amended to overcome this rejection. Reconsideration and allowance is requested.

Claim Rejections - 35 U.S.C. §102

Independent claim 1 has been amended to specify that the electric motor is axially aligned with said working head. A gripping region, around which one hand of a user can be placed, is formed around the electric motor such that in use, the hand of the user at least partially encircles the housing around the electric motor. An actuating switch is provided on the housing and is forward of the gripping region. In use, the hand of the user can actuate the actuating switch while gripping the gripping region.

Claims 1, 3-5 and 10 were rejected under 35 U.S.C. §102(b) as being anticipated by DE 201 13 238. Claim 3 was canceled without prejudice. Reconsideration of claims 1, 4, 5 and 10 in view of the amendments made herein is requested.

DE 201 13 238 provides a pressing device in which the motor is not axially aligned with the working head. As described in the enclosed translation, the motor is housed in motor casing 2a and the working head 3 is attached to cylinder casing 2b. As a result, the motor is not axially aligned with the working head. The present invention provides an in-line pressing device in which the motor is axially aligned with the working head. This provides a one-piece assembly, which makes manufacturing of the pressing device simpler and more cost efficient, as opposed to the two-component device of DE 201 13 238.

Therefore, Applicant submits that DE 201 13 238 does not anticipate and does not render obvious amended claim 1. Reconsideration and allowance is requested.

Claims 4, 5 and 10 are dependent upon amended claim 1 which Applicant submits is allowable. Reconsideration and allowance of claims 4, 5 and 10 is requested.

Claims 1, 3 and 7-11 were rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,727,417 to Moffat. Claim 3 was canceled without prejudice. Reconsideration of claims 1 and 7-11 in view of the amendments made herein is requested.

Moffat discloses a pressing device which has a handle assembly 32 attached to the body portion 28 in which the motor 48 is housed and the working head is attached. The handle assembly 32 is not formed around the electric motor such that in use, the hand of the user at least partially encircles the electric motor. The actuating switch 152/154 is provided on the handle assembly 32. In use, the hand of the user can only actuate the actuating switch while gripping the handle assembly 32.

Moffat presents and entirely different assembly than the presently claimed invention as defined in amended claim 1. Applicant thus submits that Moffat does not anticipate and does not render obvious amended claim 1. Reconsideration and allowance is requested.

Claims 7-11 are dependent upon amended claim 1 which Applicant submits is allowable. Reconsideration and allowance of claims 7-11 is requested.

Newly-Presented Claims

Claims 22-24 is newly-presented and are dependent upon claim 1. Entry, consideration and allowance is requested.

Allowable Subject Matter

The Examiner indicated that claims 2 and 6 would be allowable if rewritten in independent form to overcome the rejection under 35 U.S.C. §112, second paragraph. Applicant has presented new independent claims 25 and 26, which correspond to claims 2 and 6 in an amended form to overcome the rejection under 35 U.S.C. §112, second paragraph. Entry and allowance of these claims is requested.

Information Disclosure Statement

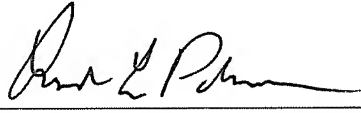
Applicant submitted an Information Disclosure Statement (IDS) on January 30, 2007. Entry of this IDS is requested. The Examiner is advised that no item of information contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable

inquiry, no item of information contained in the IDS was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the IDS. Therefore, consideration of same is requested. If a fee is necessary for consideration of the IDS filed on January 30, 2007, the Commissioner is authorized to charge such fee to Deposit Account No. 20-1495.

In view of the above Amendments and Remarks, Applicant respectfully submits that the claims of the application are allowable over the rejections of the Examiner. Should the Examiner have any questions regarding this Amendment, the Examiner is invited to contact one of the undersigned attorneys at (312) 704-1890.

Respectfully submitted,

Date: March 29, 2007

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DE 201 13 238 U1

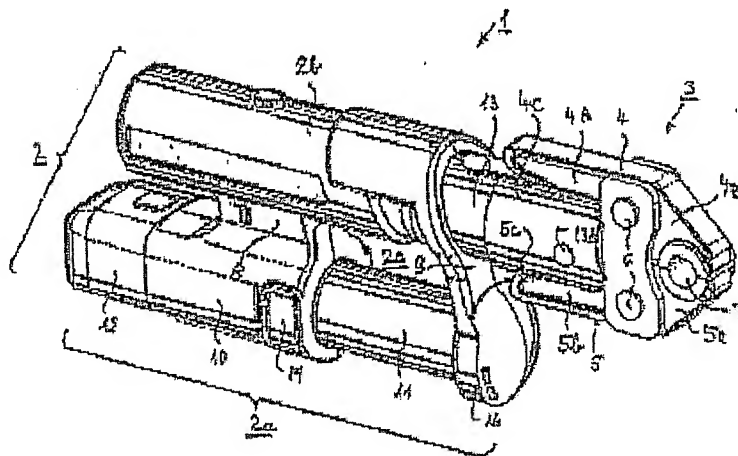
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A request for patent search has been filed in accordance with § 7, paragraph 1, GmbG [Law on Utility Patents].

(54) **A hand tool with an electrohydraulic drive part and a work head.**

(57) A hand tool (1) with an electrohydraulic drive part (2) and a work head (3) which can be activated by the same, particularly for the pressing of tubes (18) and tube connectors, characterized in that, the drive part (2) has a motor casing (2-a) and a cylinder casing (2-b) which are at least essentially displaced in the transverse direction and are held apart from one another at a distance in parallel with one another and by means of at least one spacer (8, 9), and that, a connector (13) in which the work head (3) is held projects from the cylinder casing (2-b) in the axial extension.



DE 201 13 238 U1

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**A hand tool with an electrohydraulic drive part
and a work head.**

The invention relates to a hand tool with an electrohydraulic drive part and a work head which can be activated by the same, particularly for the pressing of tubes and tube connectors.

The drive part of such a hand tool, and the possibilities for its use, have been described in DE 195 35 691; a work head for the radial pressing of tube connections that can be used for this purpose has been disclosed in DE 44 46 504 C1. In the drive part in accordance with DE 195 35 691, the electrical motor, a reduction gear, the reservoir for the hydraulic fluid, and the hydraulic cylinder, with its relatively long piston rod, are positioned in a row inside a single, composite casing, so that a construction results which is greatly extended in its length and is very bulky, and which is fairly unwieldy when the relatively heavy work head is placed on. This has particularly disadvantageous effects because of a pistol-shaped handle in which a single switch for the motor current is positioned for handling, particularly since the front end of the casing has to be grasped by means of a second hand.

In contrast to this, the task of the present invention lies in specifying a hand tool of the type described above, which is distinguished by a short overall construction length and which can be operated in an ergonomic manner with only one hand, if necessary.

The solution of the task set is carried out, in the hand tool in accordance with the invention described above, through the fact that the drive part has a motor casing and a cylinder casing which are held displaced at least essentially in parallel with one another in the transverse direction and at a distance from one another by means of at least one spacer, and that, a connector in which the work head is held protrudes from the cylinder casing in an axial extension.

The task set is solved to a complete extent by means of the invention -- that is to say, a hand tool of the type stated above is described which is characterized by a short overall construction length and which can be operated in an ergonomic manner with only one hand, if necessary, if the hand tool is held in a horizontal position at approximately the area below the center of mass, for example, as depicted in Figure 4.

Because of additional configurations of the invention, it is thereby particularly advantageous if -- either individually or in combination --:

- * A drive motor with a reduction gear, a hydraulic pump, and a reservoir for hydraulic fluid, if necessary, are positioned in the motor casing, and if a drive cylinder with a piston and a piston rod, which can be slid into the connector, is positioned in the cylinder casing;
- * The motor casing has a middle part which is connected with the cylinder casing by means of a first spacer, and has a front part which is connected with the cylinder casing by means of a second spacer;
- * A gap is formed between the spacers, on the one hand, and between the motor casing and the cylinder casing, on the other hand, through which the front part of the motor casing can be grasped by the hand of an operator, whereby the fingers can be inserted through the gap;
- * The center of mass of the hand tool, considered in the longitudinal direction in a horizontal position, lies in the area of the front part;
- * The middle part can be grasped by the hand of an operator over a circumference of more than 180 degrees;
- * The middle part is extended on its rear side through a removable aligning end part, within which either a storage battery or a power transformer is accommodated;
- * At least one switch for the motor current is positioned on both the front end of the middle part and the front part, particularly if two switches for the motor current are positioned in a symmetrical configuration on the front ends of the middle part and of the front part on the one common central or symmetrical plane of the motor casing and the cylinder casing;
- * The motor casing and the cylinder casing, along with the spacers, consists of two symmetrical half-shells, preferably of plastic, with each being formed as a single part;
- * The connector with the work head can be rotated by at least 90 degrees relative to the cylinder casing;

- * The work head is designed as a pressing head for the radial or axial pressing of the tube connections;
- * The work head is designed as a cutting head;
- * The cylinder casing is designed to be shorter than the motor casing;
- * The at least one switch is curved in an arc shape and is adjusted to the adjacent surface, and/or, if:
- * The hydraulic lines are guided through at least one of the spacers.

Additional advantages connected with this are stated in the following detailed description.

One embodiment of the object of the invention and its mode of operation are illustrated in further detail in the following by means of Figures 1 to 5.

These depict the following:

Figure 1: A perspective representation of the hand tool;

Figure 2: A view from above of the object of Figure 1;

Figure 3: A view from below of the object of Figure 1;

Figure 4: The operating position of the hand tool upon one-handed operation; and:

Figure 5: The operating position of the hand tool in a two-handed operation.

A hand tool 1, which has an electrohydraulic drive part 2 and a work head 3 that is dismountable and rotatable around its axis of symmetry, is depicted in Figure 1. This work head 3 is, in the present case, designed as a pressing head that has two double-armed pressure clamps 4 and 5, which can be swiveled in parallel with one another around two pivot pins 6. A clamping gap 7 for the production of a pressing connection of the tube and/or tube connectors, which gap has internal surfaces that are semi-cylindrical, polygonal, and/or profiled in the longitudinal direction, and which connectors are inserted into one another in a telescoping manner, is positioned between the lever arms 4-a and 5-a that are further from the drive unit. Such pressing connections are already known, and are thus not described in further detail. The clamping gap 7 is adjusted to such pressing connections.

The lever arms 4-b and 5-b on the drive side have control surfaces 4-c and 5-c on their internal sides, which [surfaces] are designed as oblique planes on which expanding rollers, which are not depicted here, act. In the retracted condition of the expanding rollers, the lever arms 4-b and 5-b can be pressed together by hand against the force of an expanding spring, as the result of which the clamping gap 7 opens wide enough to be slid up onto the tube connection in the radial direction. Through the forward feeding of the expanding rollers, the clamping gap 7 is closed again, and the tube connection is pressed.

The drive part 2 has a motor casing 2-a that is extended in length, in which an electrical motor and a gear unit, a hydraulic pump, and a reservoir for the hydraulic fluid, if necessary, are positioned, as well as a cylinder casing 2-b, in which a hydraulic cylinder is positioned with a piston and a piston rod. The casings 2-a and 2-b proceed with the transverse displacement of their virtual axes at least essentially in parallel to one another and are held, by means of the spacers 8 and 9, at such a distance from one another that the finger of an operator can be inserted between the casings 2-a and 2-b.

The motor casing 2-a has three sections, that is to say: a middle part 10; a front part 11, the front end of which is connected with the spacer 9; and a removable end part 12, within which a storage battery is accommodated. This end part can also be substituted by a geometrically similar end part with a power transformer and a connector cable.

The middle part 10 is connected with the cylinder casing 2-b by means of the spacers 8. A connector 13 projects from the cylinder casing 2-b, which [connector is] coaxial to and rotatable relative to this and has two side sections 13-a and 13-b, which enclose the one gap 13-c of the walls with parallel faces between themselves, within which the lever arms 4-b and 5-b on the drive side can be swiveled (Figures 2 and 3). Furthermore, a hollow space, which is not particularly emphasized, is positioned within the connector, within which [space] the piston rod, along with the expanding rollers described above, can be slid in against the control surfaces 4-c and 5-c under the influence of the hydraulic drive. The work head 3 is held by means of an insertable bolt, not depicted, which is inserted into the connector 13 through two aligning borings 13-d.

As emerges from Figures 1 and 3, the motor casing 2-a is provided with four switches 14, 15, 16, and 17, which are curved in an arced shape and are adjusted to the adjacent surface and, specifically so, the switches 14 and 15 are positioned in a symmetrical configuration on the front end of the middle part 10, and the switches 16 and 17 are [positioned] in a symmetrical configuration on the front end of the front part 11 or on the lower end of the spacer 9, as the case may be. The switches 14 to 17 are, in the operating positions depicted in Figures 4 and 5, comfortably accessible from the sides and from the lower side, as well as in the directions transverse to this, as is evident from an examination of Figures 1 and 3.

A gap 2-c is created between the motor casing 2-a and the cylinder casing 2-b by means of the spacers 8 and 9, through which [gap] the four fingers of one hand of the operator can be inserted when grasping the front part 11 with sufficient freedom of movement. At the same time, the front spacer 9 serves as a finger protection. The terms "front" and "back" are to be understood in reference to the work head 3 and the direction in which it is placed on; that is to say, the work head is at the "front". By that means, the hand tool 1 can be operated in a one-handed manner, independently of its position, and with two hands by a right-handed person or a left-handed person.

Figure 4 now depicts the one-handed operation of the hand tool 1 by the right hand of an operator, which encloses the front part 11 of the motor casing 2-a. The switch 14 can be activated by means of the thumb. The connector 13, along with the work head 3, is in this case rotated by 90 degrees relative to Figures 1 to 3, so that pressing actions can also be carried out on the vertical tubes 18. The center of mass of the entire hand tool is now positioned above the area of this front part 11, which serves as a handle, even in the position depicted, so that an ergonomic operation is possible.

Figure 5 now depicts the two-handed operation of the hand tool 1 by both hands of an operator, which encompass both the front part 11 as well as also the middle part 10 of the motor casing 2-a. The middle part 10 also serves as a handle. Either the switch 15 (as depicted) or the switch 17 can now be activated with one of the index fingers in each case, as desired. The switch 14, which is not shown here, can also be activated as desired by the thumb of the right hand. In this case, the connector 13 with the work head 3 has the same angular position as in Figures 1 to 3, so that pressing actions can also be carried out on the horizontal tubes. An ergonomic operation is also possible in this case. The hand tool 1 can also be used in an ergonomic manner in an over-the-head position on tubes in the area of a ceiling, as well as in the floor area, such as in floor heating units, for example.

The work head 3 does not need to be designed as a radially acting pressing tool, as is depicted, but it can instead also be designed -- upon the corresponding design of the clamping gap 7 --, for the axial sliding together of tube connectors, by means of an axially-acting pressing tool which is already known, or even have edges for the separation of tubes, profiled sections, and cables. Finally, it is also possible to replace the work head with a measuring head in order to measure driving forces.

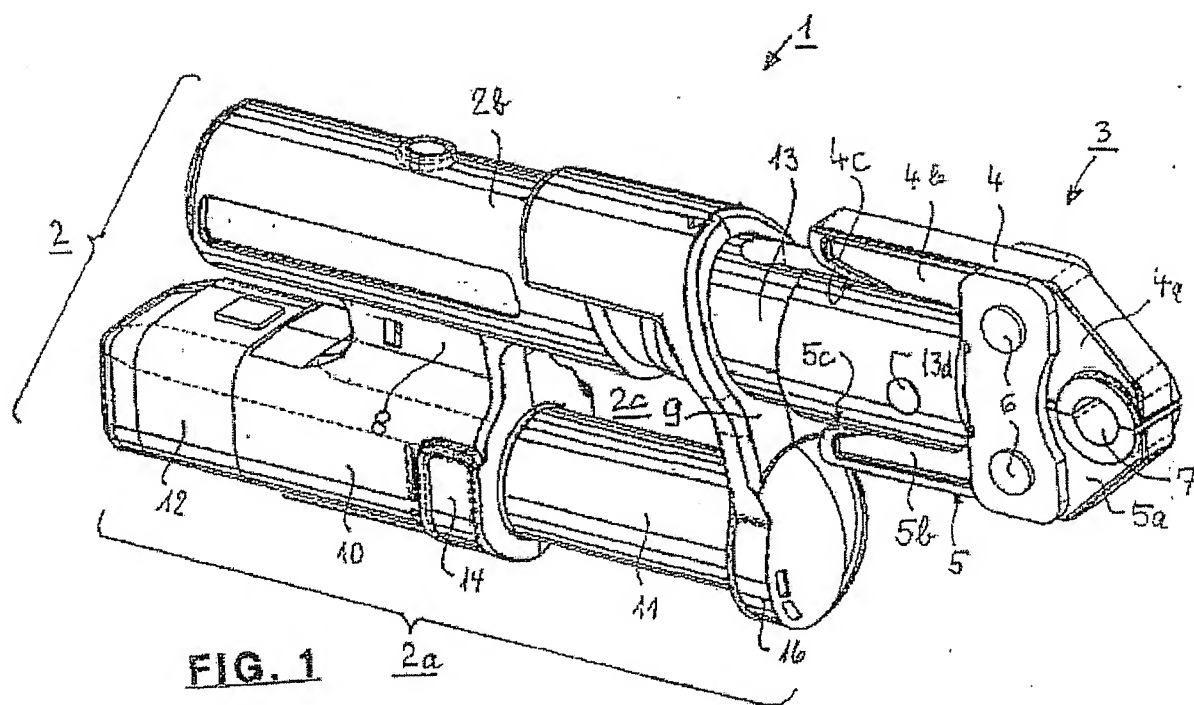
List of parts references:

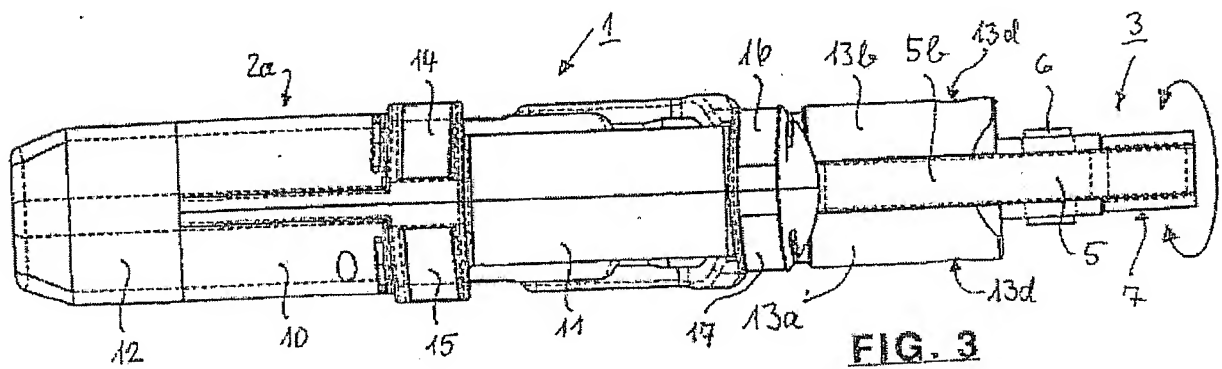
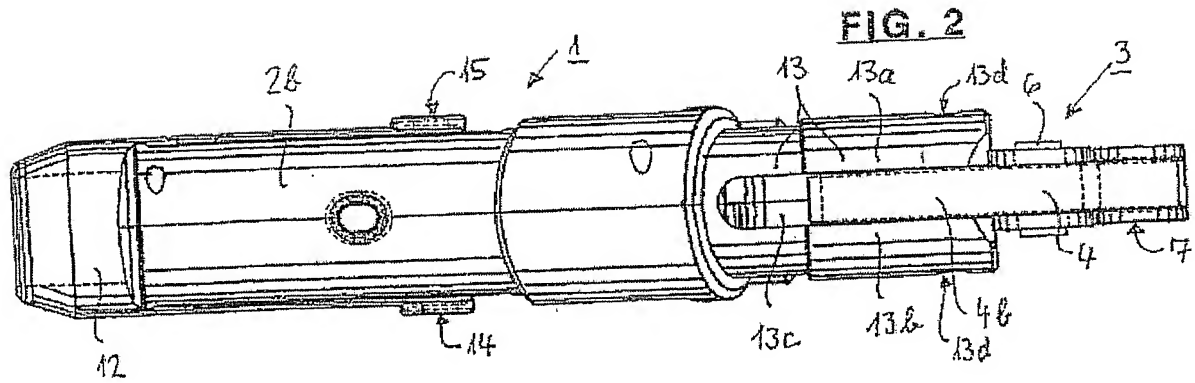
1	Hand tool
2	Drive part
2-a	Motor casing
2-b	Cylinder casing
2-c	Gap
3	Work head
4	Pressure clamp
4-a	Lever arm
4-b	Lever arm
4-c	Control surface
5	Pressure clamp
5-a	Lever arm
5-b	Lever arm
5-c	Control surface
6	Pivot pins
7	Clamping gap
8	Spacers
9	Spacers
10	Middle part
11	Front part
12	End part
13	Connector
13-a	Side section
13-b	Side section
13-c	Gap
13-d	Borings
14	Switch
15	Switch
16	Switch
17	Switch
18	Tube

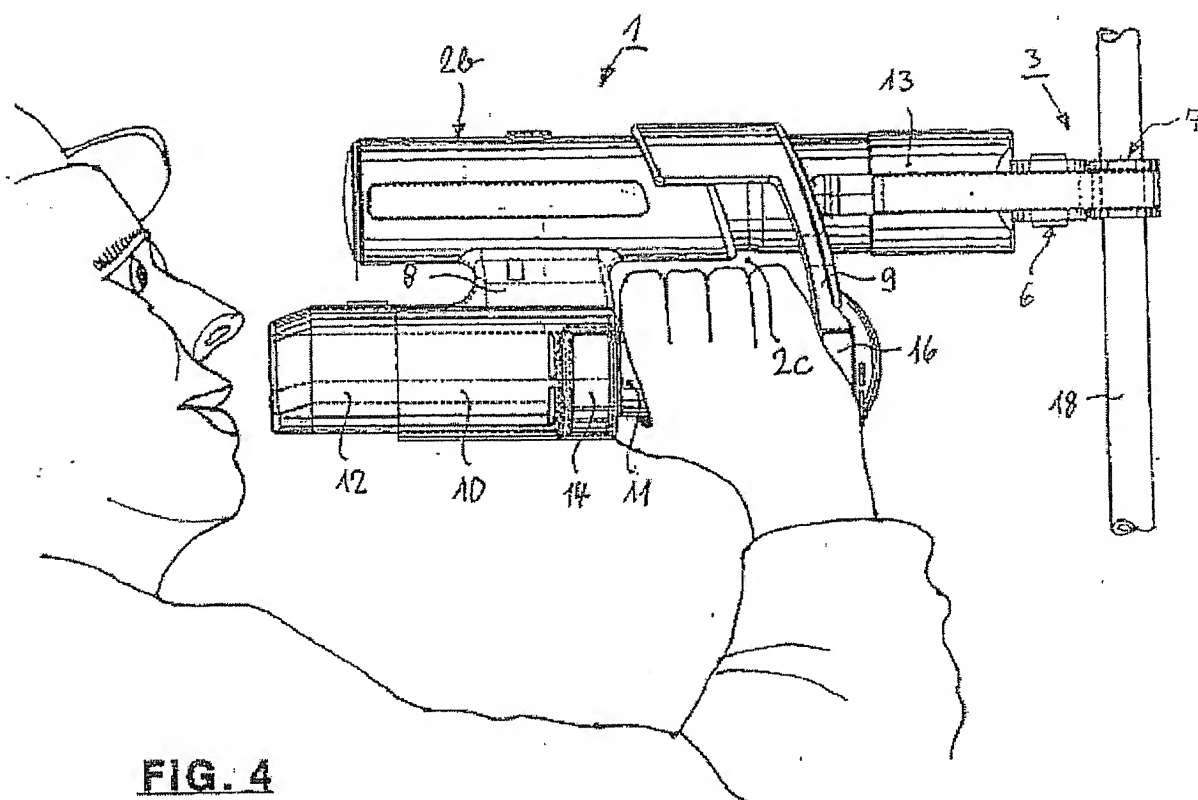
Claims:

- 1) A hand tool (1) with an electrohydraulic drive part (2) and a work head (3) which can be activated by this, particularly for the pressing of tubes (18) and tube connectors, **characterized in that**, the drive part (2) has a motor casing (2-a) and a cylinder casing (2-b) which are held at least essentially in parallel to one another and are displaced in the transverse direction at a distance from one another by means of at least one spacer (8, 9), and that, a connector (13), by means of which the work head (3) is held, projects from the cylinder casing (2-b) in an axial extension.
- 2) A hand tool in accordance with claim 1, **characterized in that**, a drive motor, a hydraulic pump, and a reservoir for a hydraulic fluid are positioned within the motor casing (2-a), and that, a drive cylinder with a piston and a piston rod, which can be slid into the connector (13), is positioned in the cylinder casing (2-b).
- 3) A hand tool in accordance with claim 1, **characterized in that**, the motor casing (2-a) has a middle part (10), which is connected with the cylinder casing (2-b) by means of a first spacer (8), and a front part (11), which is connected with the cylinder casing (2-b) by means of a second spacer (9).
- 4) A hand tool in accordance with claim 3, **characterized in that**, a gap (2-c) is formed between the spacers (8, 9), on the one hand, and between the motor casing (2-a) and the cylinder casing (2-b), on the other hand, through which [gap] the front part (11) of the motor casing (2-a) can be grasped by the hand of an operator, whereby the fingers can be inserted through the gap (2-c).
- 5) A hand tool in accordance with claim 4, **characterized in that**, the center of mass of the hand tool (1), considered in the longitudinal direction, lies in the area of the front part (11).
- 6) A hand tool in accordance with claim 3, **characterized in that**, the middle part (10) can be grasped by the hand of an operator over a circumference of more than 180 degrees.
- 7) A hand tool in accordance with claim 3, **characterized in that**, the middle part (10) is extended on its rear side by a removable aligning end part (12), within which a storage battery is accommodated.

- 8) A hand tool in accordance with claim 3, **characterized in that**, the middle part (10) is extended on its rear side by means of a removable aligning end part (12), within which a power transformer is accommodated.
- 9) A hand tool in accordance with claim 3, **characterized in that**, at least one switch each (14, 15, 16, 17) for the motor current is positioned on the front ends of the middle part (10) and of the front part (11).
- 10) A hand tool in accordance with claim 9, **characterized in that**, two switches (14, 15; 16, 17) for the motor current are each positioned on the front ends of the middle part (10) and of the front part (11), in a symmetrical configuration to the one common central plane of the motor casing (2-a) and the cylinder casing (2-b).
- 11) A hand tool in accordance with one of the claims 1 and 10, **characterized in that**, the motor casing (2-a) and the cylinder casing (2-b), along with the spacers (8, 9), consist of two symmetrical half-shells each as a single part.
- 12) A hand tool in accordance with claim 1, **characterized in that**, the connector (13), along with the work head (3), can be rotated by at least 90 degrees relative to the cylinder casing (2-b).
- 13) A hand tool in accordance with claim 1, **characterized in that**, the work head (3) is designed as a pressing head for a radial pressing of tube connections.
- 14) A hand tool in accordance with claim 1, **characterized in that**, the work head (3) is designed as a pressing head for an axial pressing of the tube connections.
- 15) A hand tool in accordance with claim 1, **characterized in that**, the work head (3) is designed as a cutting head.
- 16) A hand tool in accordance with claim 1, **characterized in that**, the cylinder casing (2-b) is designed to be shorter than the motor casing (2-a).
- 17) A hand tool in accordance with claim 9, **characterized in that**, the at least one switch (14, 15, 16, 17) is curved in an arc shape, and is adjusted to the adjacent surface.
- 18) A hand tool in accordance with claim 1, **characterized in that**, the hydraulic lines are guided through at least one of the spacers (8, 9).







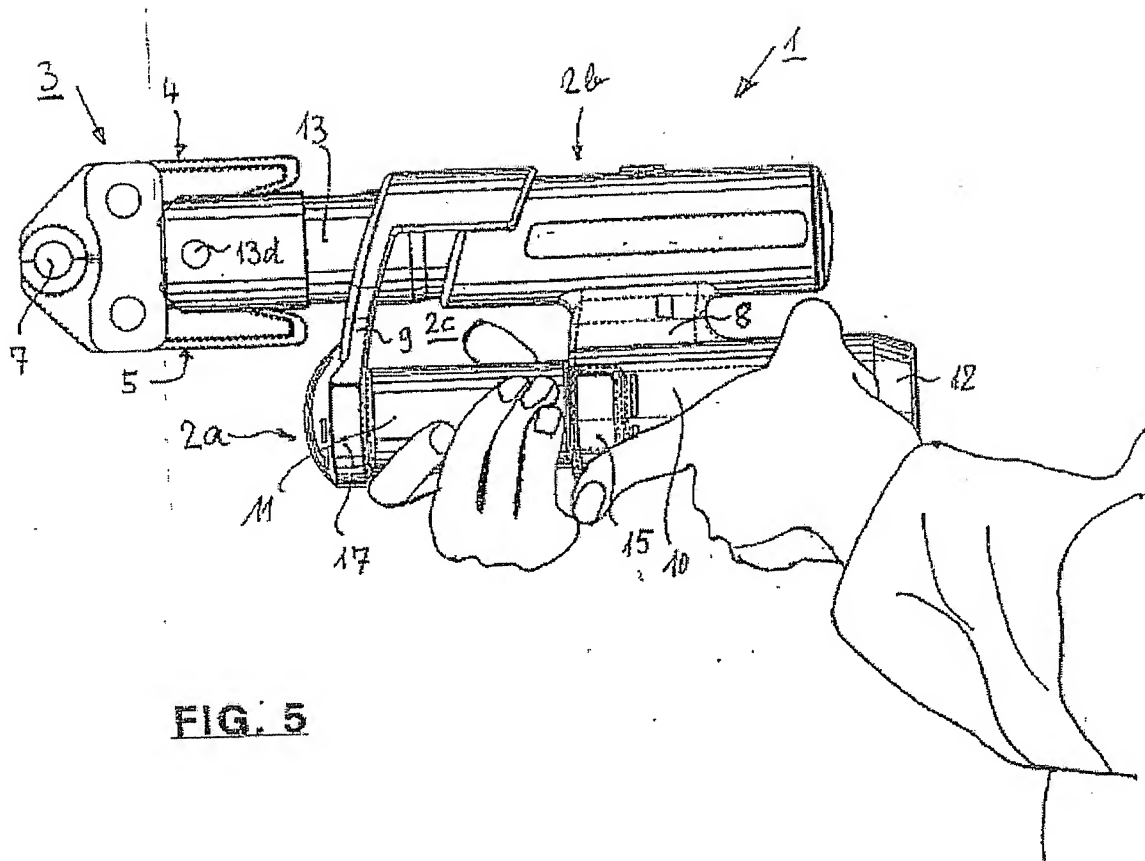


FIG. 5